EBA REPORT
ON THE 2024 CREDIT RISK
BENCHMARKING EXERCISE

RESULTS ON THE ANALYSIS OF THE VARIABILITY OF OWN
FUNDS REQUIREMENTS BASED ON THE IRB APPROACH

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Abbreviations

AIRB	advanced internal ratings-based
avg_ead	variable indicating ead on average
CA	competent authority
CCF	credit conversion factor
CfA	call for advice
CGCB	central governments and central banks
COREP	common supervisory reporting
CORP	exposures to corporates other
COSP	Exposures to specialised lending
CRD	Capital Requirements Directive
CRM	credit risk mitigation
CRR	Capital Requirements Regulation
cr_proxy	variable indicating a proxy of cure rate
DR	default rate
DR 1Y	default rate of last year
DR 5Y	Average default rate over the last five years
EAD	exposure at default
EBA	European Banking Authority
EL	expected loss
EU	European Union
FinGar	variable indicating the presence of financial guarantee
FIRB	foundation internal ratings-based
GC	global charge
GL	Guidelines
GOVT	Exposures to central governments
HDP	high-default portfolio
INST	exposures to institutions
IRB	internal ratings-based
ITS	implementing technical standards
LCOR	exposures to large corporates
LDP	low default portfolio

LEI	Legal Entity Identifier
LGD	loss given default
LR	loss rate
LR 1Y	loss rate observed on the defaults of last year
LR 5Y	Average loss rate observed on the defaults over the last five year
MoC	margin of conservatism
MORT	exposures to residential mortgages
OthGar	variable indicating the presence of other guarantee
PD	probability of default
PPU	permanent partial use
QoQ	quarter on quarter
QRE	exposure class qualifying revolving
RealGar	variable indicating the presence of real estate collateral
RGLA/ PSE	regional governments and local authorities/public sector exposures
RETO	exposures to other retail non SME
RSMS	exposures to retail mortgages SME
RQRR	exposures to retail qualifying revolving
RW	risk weight
RWA	risk-weighted assets
SA	standardised approach
SLSC	specialised lending slotting criteria
SMEC	exposures to corporate small and medium-sized enterprises
SMER	exposures to retail small and medium-sized enterprises
SMEs	small and medium-sized enterprises
SMOT	Exposures to other retail SME
SVB	supervisory benchmarking
Time	variable indicating the time to recovery
UL	unexpected loss

Executive Summary

Legal Mandate	Article 78 of the CRD provides for the monitoring and assessment of risk-weighted exposure amounts (RWAs), which determine the own funds requirements for IRB banks. The annual benchmarking exercise, mandated in this article, aims to monitor the variability of the RWAs for institutions applying the IRB approaches in EU Member States.

This report summarises the main results of the 2024 benchmarking exercise (based on data as of 31 December 2023 that has been collected between April 2024 and September 2024).

The EBA IRB roadmap is expected to reduce the undue variability of own fund requirements across institutions that apply the IRB approach.	In comparison with the previous year, the share of material model changes that have been approved has increased for all asset classes, indicating that the implementation of the IRB roadmap is progressing, although a remaining portion categorized as material model change is planned but not yet approved [1]. Regardless, supervisors should monitor the sensitivity of the risk metrics in relation to the evolution of the risk observed figures.
The PD variability has decrease in the last years, while the LGD does not present a clear trend. Margin of conservatism and collateralisation explain parts of the variability in credit risk parameters.	The report shows the evolution of the variability of the risk parameters over the 2015-2023 period. A clear decreasing trend of variability can be observed in most of the asset classes for the PD, whereas for the LGD, the variability does not show a clear trend, or it is only slightly decreasing for most asset classes. The report provides evidence that, besides risk factors able to capture the underlying portfolio characteristics, margin of conservatism adopted by institutions to deal with data deficiencies and weaknesses in the modelling approaches could potentially explain part of the variability. A specific analysis regarding the portfolio Retail shows the role that the type and degree of collateralization (that represents a risk factor) can play in explaining the variability of the LGD.

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[1] The level of consolidation considered is the highest at the EU level (subsidiaries of EU banks are excluded)

1. Introduction

1. Institutions, which apply the IRB approach, calculate their own funds requirements based on a set of parameters which they partially (under the FIRB approach) or completely (under the AIRB approach) estimate themselves. Article 78 of the CRD provides for the monitoring and assessment of risk-weighted exposure amounts (RWAs) that result from the application of the institutions' estimates.

2. The annual benchmarking exercise, mandated in this article, aims to monitor the variability of the RWAs for institutions applying the IRB approaches in EU Member States. Excessive unwarranted variability of RWAs among EU institutions, and thus non-comparable resulting own funds requirements, have been a concern since the IRB approach was implemented as an EU regulation in 2013[2].

3. Since then, the EBA has put forward a regulatory review of the IRB approach by setting out and completing several guidelines and technical standards, which are aimed at limiting unjustified variability by harmonizing practices. This package is referred to as EBA's IRB roadmap set out in 2016, and institutions are in the process of reviewing their approaches to achieve compliance with the harmonized practices. In addition, since then, the ECB has carried out a large-scale review of the IRB approaches, which are supervised by the Single Supervisory Mechanism (SSM), referred to as the Targeted Review of Internal Models (TRIM).

4. This report summarises the main results of the 2024 benchmarking exercise (based on data as of 31 December 2023 that has been collected between April 2024 and September 2024).

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[2] EBA's report on comparability and procyclicality of own funds requirements under the IRB approach published in December 2013

2. General statistics on the materiality of the IRB approach

2.1 IRB Coverage Ratio

5. This section provides the evolution of the relative amount of exposure that is subject to the IRB method. To this end, the relative share of the EAD, for which the AIRB method or the FIRB method is used, is represented. The analysis benefits from the data that the EBA regularly receives thanks to the EUCLID project[3]. In turn, this makes it possible to take into consideration also small and local institutions and to extend the analysis to institutions applying the Standardized Approach.

6. Available data for the study starts at the end of 2020. The level of consolidation considered is the highest at the EU level (subsidiaries of EU institutions are not considered). The period considered is 31/Dec/2020 – 30/Jun/2024 on a quarterly basis. The following table shows that in June 2024, under EUCLID, the EBA collected prudential information from about 2,8 thousand institutions, of which 2,066 reported the data for the entire period (15 quarters). These institutions represented about 94% of total assets[4] in June 2024.

Table 1: Nr of institutions reporting to the EBA

	Nr of institutions	Tot. Ass., 30/Jun/2024	Tot. Ead, 30/Jun/2024
Other	766	6.04%	6.20%
Stable Sample	2,066	93.96%	93.80%
All	2,832	100%	100%

Source: Corep templates C.02, C.47

7. Referring to all the reporting institutions, it was considered the exposure value (Col 0110 of C.08.02) of the IRB asset classes and the exposure value (Col 0200 of C.07.00.a) of the SA asset classes[5]. For the SA, the provisions (Col 0030 of C.07.00.a) were added to the exposure value to align the definition of the exposure with the IRB one. For both IRB and SA, only performing exposures were considered. The figure below shows that the share of the IRB over the total EAD is about 50% (definitively higher for some asset classes like Corporates and loans secured by immovable properties). This share appears slightly decreasing along the considered period but practically constant in the last quarters. The share of exposure under the IRB approach is
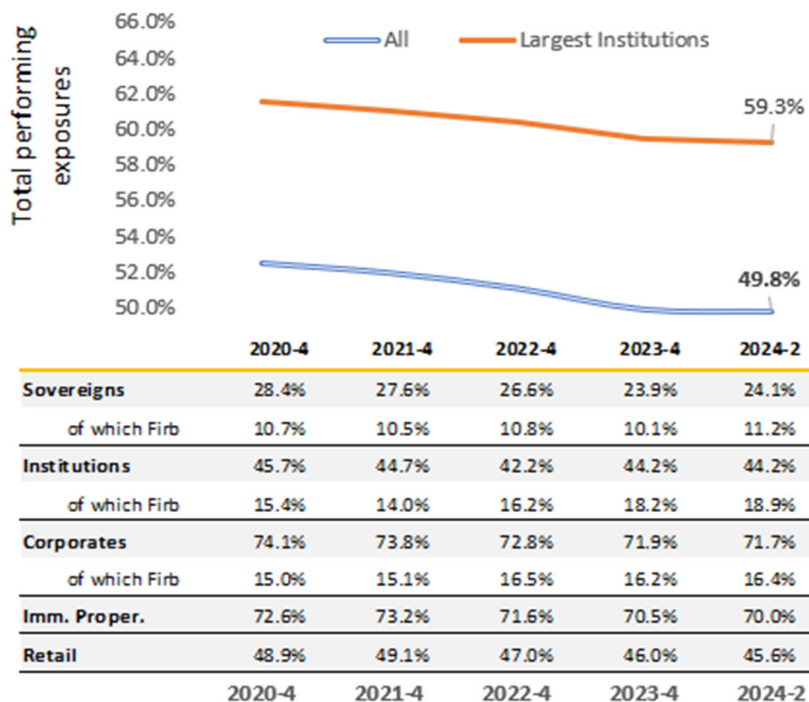
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[3] EUCLID stands for European Centralised Infrastructure for Supervisory Data. It is the platform and data infrastructure developed and used by the EBA to gather and analyse regulatory data from a wide range of financial institutions. It covers supervisory, resolution, remuneration and payments data.

[4] The Total Assets is defined as the denominator of the Leverage Ratio, row 0290 of the Template C.47.00

[5] Also SA exposures reported by IRB banks are considered

higher among the 130 largest institutions[6] (59.3%) in comparison with smaller banks (6.2% included in the blue line in the Figure 1 but not impacting materially the aggregated figures due to their relatively small size).

*Figure 1: Share of performing EAD under the IRB approach*

	2020-4	2021-4	2022-4	2023-4	2024-2
Sovereigns	28.4%	27.6%	26.6%	23.9%	24.1%
of which Firb	10.7%	10.5%	10.8%	10.1%	11.2%
Institutions	45.7%	44.7%	42.2%	44.2%	44.2%
of which Firb	15.4%	14.0%	16.2%	18.2%	18.9%
Corporates	74.1%	73.8%	72.8%	71.9%	71.7%
of which Firb	15.0%	15.1%	16.5%	16.2%	16.4%
Imm. Proper.	72.6%	73.2%	71.6%	70.5%	70.0%
Retail	48.9%	49.1%	47.0%	46.0%	45.6%
	2020-4	2021-4	2022-4	2023-4	2024-2

Source: Corep templates C.08.02, C.07.00

2.2 Risk parameters per asset classes

8. The following graphs show the trend of EAD weighted Probability of Default (PD), Loss Given Default (LGD) and Credit Conversion Factor (CCF) over the last 4 benchmarking exercises. We see some slight increases of the EAD weighted average PD for credit card, other retail exposures and SME retail exposures. However, the EAD weighted average PD increased less than observed default rate, signalling possible decrease in the PD conservativism. We instead notice a decrease in EAD weighted average PD for some asset classes like institutions and government, but also for corporates and mortgages where the default rate increased instead.

9. Therefore, supervisors should still ensure that the long-run average default rates used for (re-)calibration of PD estimates reflect the likely range of variability of default rates relevant to a considered type of exposure as required in Article 46(3) of the RTS on IRB assessment methodology. The LGD is quite stable for all asset classes over the last 4-year horizon. However, we note a very slight increase of LGD for some asset classes like mortgages (MORT) and revolving exposures (RQRR). For the CCF, it is not possible to identify any clear trend.
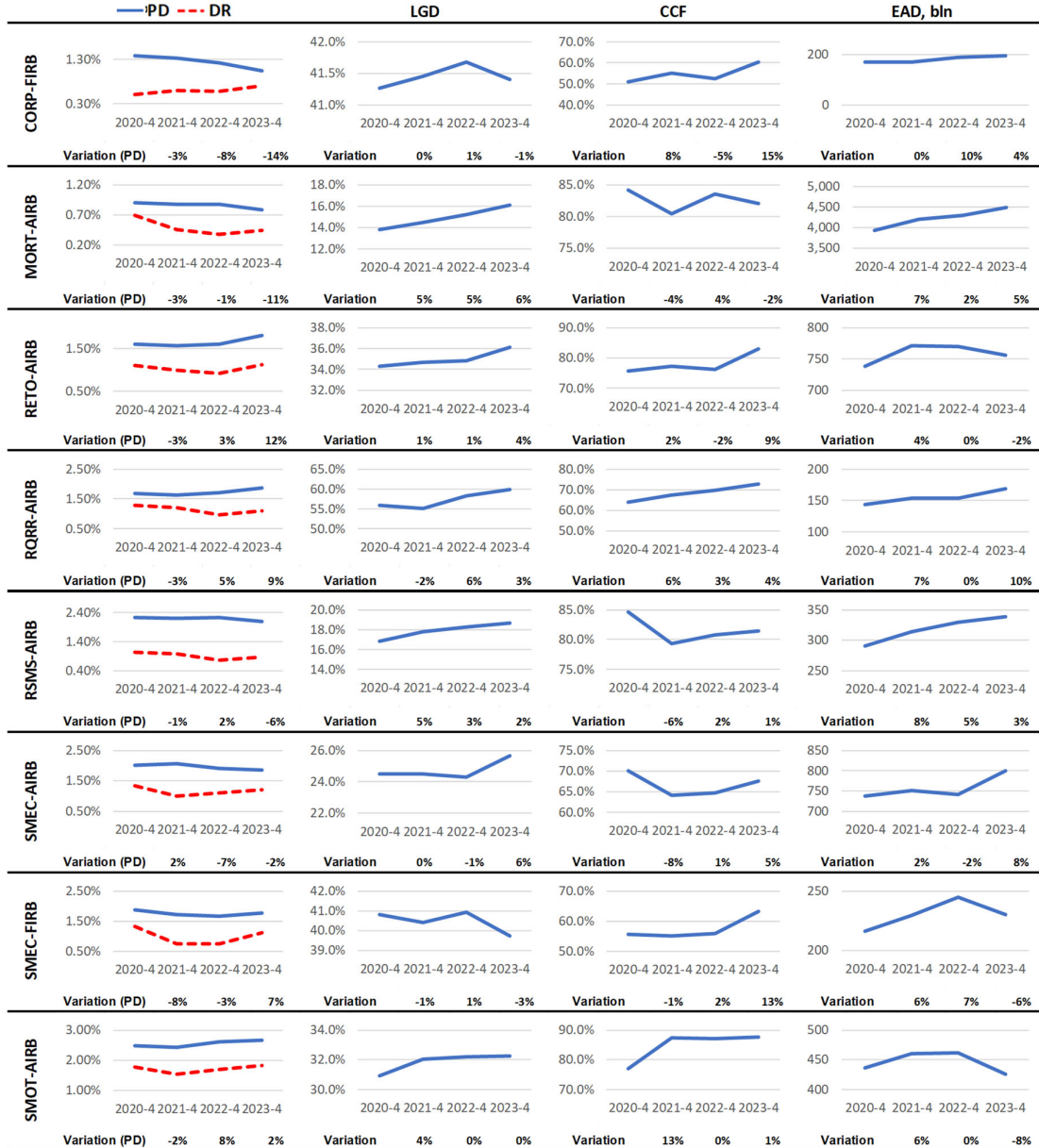
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[6] The definition of Largest Institution is provided in EBA/DC/2020/334 Article (2)(3)

Figure 1: Change in EAD and in EAD weighted average parameters by regulatory approach, non-defaulted exposures
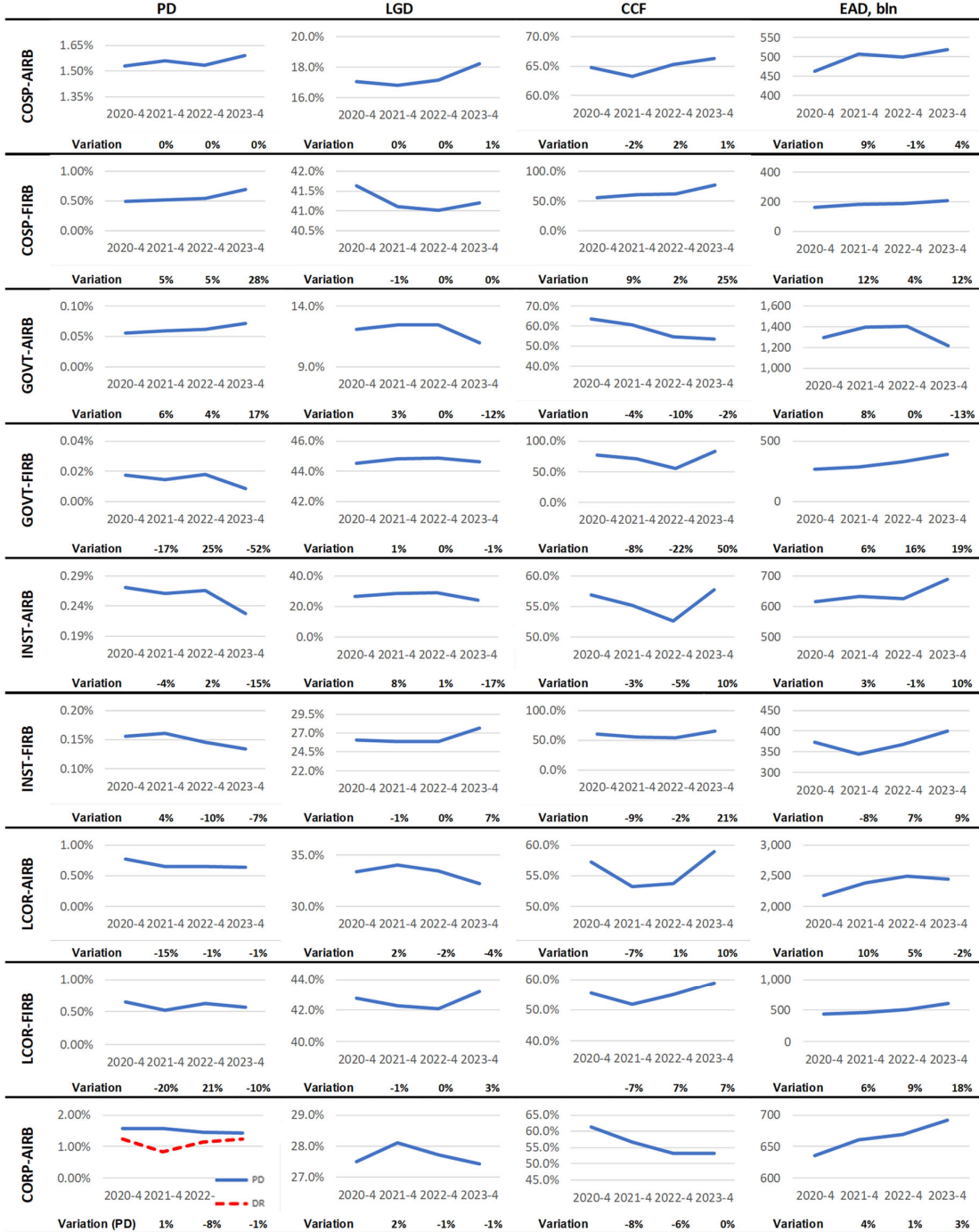
Source: Benchmarking DB

Figure 2: Change in EAD and in EAD weighted average parameters by regulatory approach, non-defaulted exposures

Source: Benchmarking DB

3. The IRB Roadmap impact on IRB Risk Parameters

10. In February 2016, the EBA set out an IRB roadmap, which outlines the regulatory journey and strategic direction for implementing and enhancing IRB approaches in the banking sector. This roadmap encompasses a series of milestones and initiatives aimed at strengthening the risk sensitivity and comparability of IRB models across EU institutions. The IRB roadmap also emphasizes the importance of fostering consistency in supervisory practices and approaches, thereby promoting a level playing field among European financial institutions. The IRB roadmap has envisaged the development and publication of a series of regulatory products to achieve the predefined objectives. Below is the list with their respective implementation dates:

Table 1: Regulatory products of the EBAs IRB roadmap

Phase	Regulatory products (amendments)	Implementation date for institutions
Phase 1: IRB assessment methodology	Final draft RTS under Articles 144(2), 173(3) and 180(3b) on the assessment methodology	Finalised (opinion) 12/2020 To be applied since Q2/2022[7]
Phase 2: definition of default	Final draft RTS under Article 178(6) on the materiality threshold for past due credit obligations	Finalised 12/2016 To be applied since 01/2021[8]
	GL under Article 178(7) on the application of the definition of default	
Phase 3: risk parameter estimation and treatment of defaulted assets	Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures (GL on PD and LGD estimation)	Finalised Q4 2017 To be applied since 01/2022[9]
	Regulatory technical standards specifying the nature, severity and duration of an economic downturn referred to in Article 181(1), point (b), and Article 182(1), point (b), of that Regulation	Finalised Q4 2018 To be applied since Q2/2021
		To be applied since 01/2022

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[7] EUR-Lex - 32022R0439 - EN - EUR-Lex (europa.eu)

[8] EBA publishes report on progress made on its roadmap to repair IRB models | European Banking Authority (europa.eu)

[9] For most IRB models. Details published here EBA publishes report on progress made on its roadmap to repair IRB models | European Banking Authority (europa.eu)

Phase	Regulatory products (amendments)	Implementation date for institutions
	GL on downturn LGD estimation (an addendum to the GL on PD and LGD estimation)	
Phase 4: credit risk mitigation	Guidelines on credit risk mitigation for institutions applying the IRB approach with own estimates of LGDs	To be applied since 01/2022

11. Against this backdrop, the EBA is committed to monitoring the implementation status of the IRB roadmap by financial institutions, providing an annual status update in this report.

3.1   Status Implementation of IRB Roadmap

12. Article 78(4) of the CRD requires CAs to make an assessment where institutions diverge significantly from the majority of their peers or where there is little commonality in approach, leading to a wide variance in results. In these cases, the CAs should investigate the reasons and take corrective action if the institution's approach leads to an underestimation of their own funds' requirements that is not attributable to differences in the underlying risks.

13. To facilitate the transfer of the information gathered in these assessments from the CAs to the EBA, the EBA issued a questionnaire to the CAs, which had to be completed for each institution participating in the SVB exercise. The EBA received responses from 97 institutions. In this context, CA and supervisors were requested to provide information on the state of implementation of model changes, as to achieve compliance with the Guidelines on Probability of Default (PD) and Loss Given Default (LGD), one of the key regulatory products of the IRB Roadmap. The following chart shows the situation as of December 31, 2023:

Figure 3: State of compliance with the GL on PD and LGD for material models, by end 2023
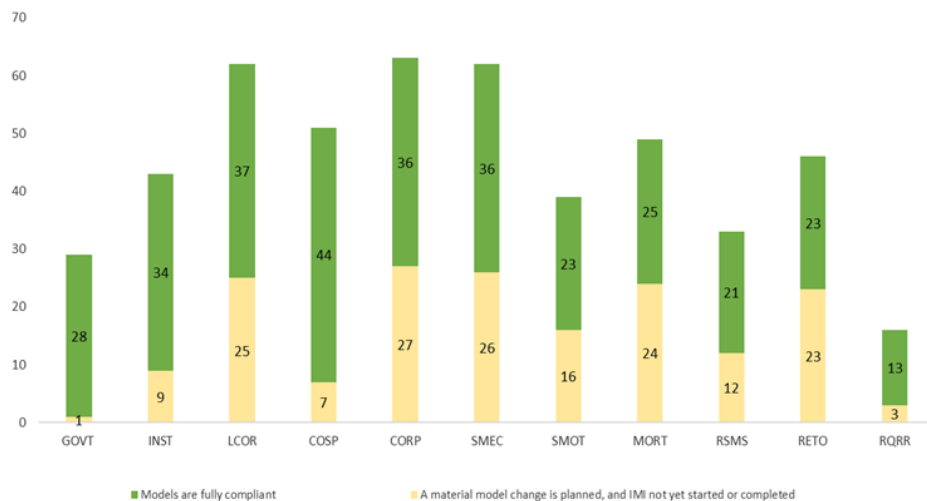
source: Benchmarking DB

14. While models categorized as "fully compliant" are significant, there remains a portion classified as "a material model change is planned, and implementation is not yet started or completed." This category reflects not only pending model updates, but also includes cases where inspections have been completed, yet the final authorization to use the validated models for calculating the credit risk capital requirement has not been received by the institution. This highlights that while progress has been made, further steps are required to achieve full compliance across all asset classes.

15. During the 2024 benchmarking exercise, several institutions explained that at the reference point in time (31.12.2023) for the data collection some of their models were still non-compliant. This difference in the pace of reaching compliance with the IRB roadmap may limit the possibility to observe trends in the variability of own fund requirements.

16. In fact, the feedback received in the 2024 benchmarking exercise shows that the IRB repair program is still being implemented with supervisors, indicating that in some cases final compliance will only be reached in 2025. While the finalization of the implementation was expected by 01.01.2022 for most models by the regulator, supervisors and institutions seem to need significantly more time for the relevant adjustments.

4. Variability over time

17. This section presents the time series of a measure of the variability of the estimated risk parameters. The aim is to verify the possible presence of trends in the variability. The period considered is 31/Dec/2015 – 30/Jun/2024 on a quarterly basis[10]. The level of consolidation considered is the highest at the EU level (subsidiaries of EU banks are excluded). AIRB and FIRB institutions are considered for the analysis of the PD.

18. A consistent sample of reporting institutions for each asset class was considered to avoid variations depending on the possible entry or exit of some banks from the analysed sample. Indeed, only the institutions that have been reporting for all reference dates in the period were taken into consideration (see Table 1, Stable sample). Banks reporting anomalous quarter-on-quarter (QoQ) variations of the average parameter at the asset class level were excluded. Moreover, to reduce the effect of mergers & acquisitions operations, banks associated with anomalous QoQ variation of their Total assets were also excluded.

19. The following table shows the size of the sample for each asset class, as well as the share of EAD covered by the sample with reference to the end of 2023.

Table 2: Composition of the sample used for the analysis of the risk parameters' variability over time

Asset Class	Sample Size	%Ead at end 2023
Institutions	30	82.0%
Corporates	45	87.6%
Sme Corporates	44	83.8%
Sme Retail	36	75.2%
Secured Sme Retail	31	77.4%
Secured Other Retail	40	80.3%
QRE	21	86.5%
Other Retail	36	75.2%

Source: Corep templates C.08.02

20. The measure of the variability represented is the standard deviation. In the following charts, the reported variability of the PDs and LGDs is grouped by asset class. A clear decreasing trend can be noticed for the standard error of the PDs for almost all the asset classes, down to values around 5%, which is a material decrease of variability for SME, other retail and corporate.

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[10] In comparison with the Section 2, it is possible to extend to 2015 the analysis because only data stemming from IRB institutions is needed.

Figure 4: Standard deviation of the estimated PD
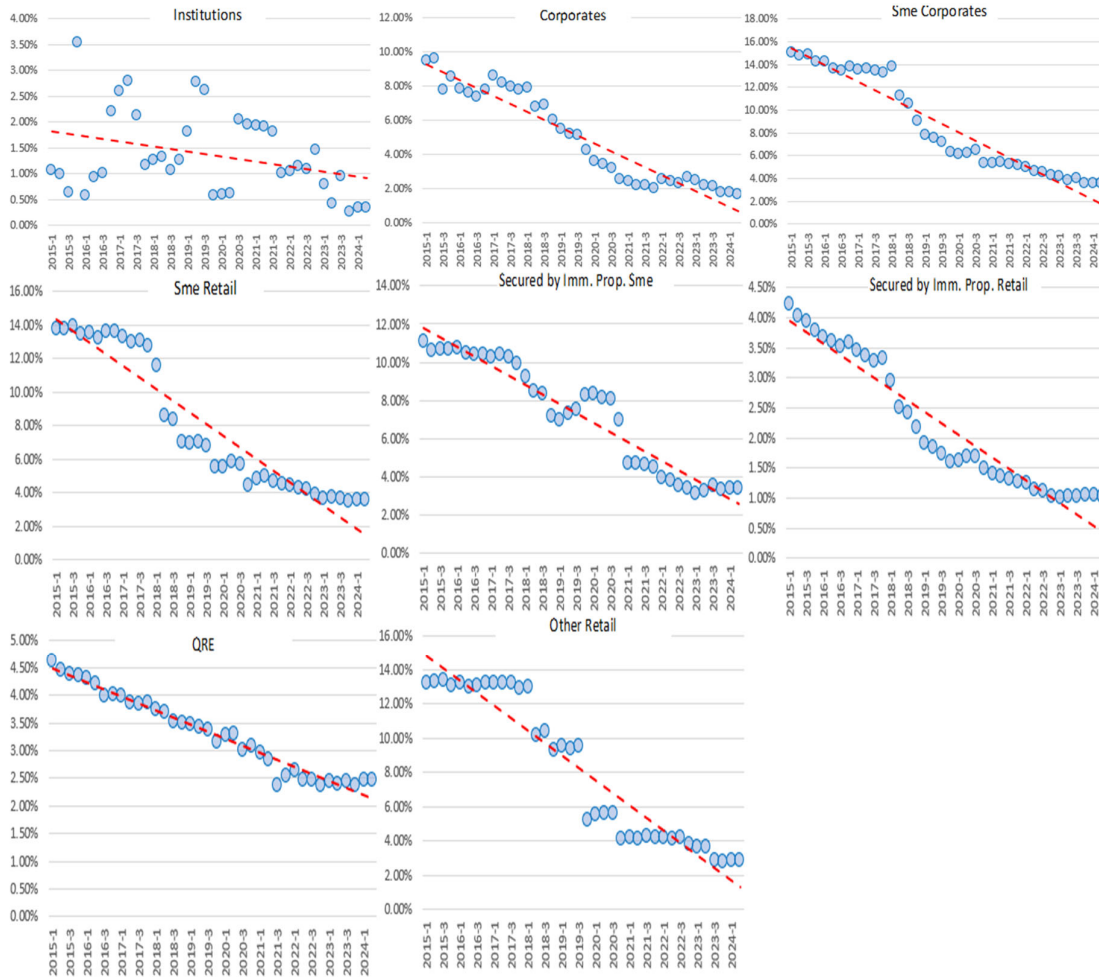
Source: Corep templates C.08.02

21. Starting from the same sample defined for the PD analysis, FIRB banks were excluded from producing the figures of the next charts. The standard deviation of the LGDs is constant or slightly decreasing for most asset classes.

Figure 5: Standard deviation of the estimated LGD

Source: Corep templates C.08.02

22. The impression of a general reduction in the variability of the estimated PDs may be due to activities of regulators and supervisors carried out in recent years aimed at increasing the homogeneity of the estimation processes. As regards the LGDs, it should be kept in mind that this parameter can be greatly influenced by different credit policies (in terms of loan to value, collateral and guarantees for example) but also by structural differences between countries.

23. The EBA Report on benchmarking of national insolvency frameworks across the EU (EBA/Rep/2020/29) indicates that the existence of certain characteristics related to both the legal framework and the judicial capacity are important to improve the recovery outcomes.

5. PD

5.1 Comparability of PD vs Default Rates

24. Given asset classes that are homogeneous in terms of facility types and borrowers, the observed variability of the average PDs reported by the IRB banks should be explained by the underlying risk level. To verify this hypothesis, we use the average yearly default rate observed in each period.

25. It must be kept in consideration that the IRB risk parameters are meant to provide long-run risk measures. For this reason, considering the default rate of a given year would not be appropriate. Instead, the PDs are compared with the average of the yearly default rates observed over five years. It can be noticed from the figure below that, on average, the PDs are higher than the average default rates for all the asset classes. The histogram in the figure provides the relative amount of EAD for which the average PD (computed at portfolio and bank-level) is higher than the average five-year default rate.

Figure 6: EAD weighted Average PDs vs EAD weighted average Default rates – December 2023
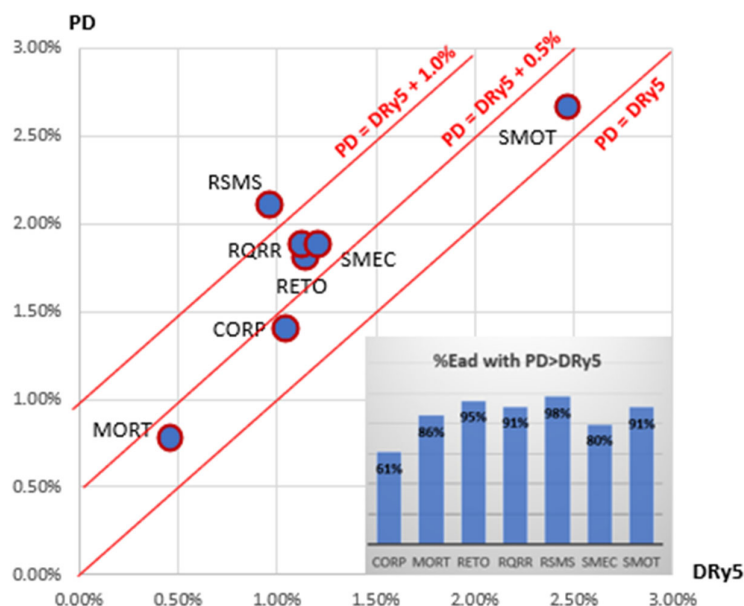
Source: Benchmarking DB

26. By grouping the institutions reporting the data for a given asset class on the ground of the quartiles of the five-year average default rate, we would expect to observe a similar differentiation in terms of the reported PD. Indeed, from the table below, a common increasing trend can be noticed for all the asset classes; however, it can also be noticed that

the differentiation between the groups[11] is sometimes limited, and, in some cases, it is not coherent with the default rates. For example, the first cluster for the Corporates asset classes has an average PD equal to 1%, while the average five-year default rate is lower than 0.1%; for residential mortgages (MORT) the average PD of the two central quartiles differ by just - 2 basis points (from 0.83% to 0.81%), while the difference in terms of five-year DR is equal to 20 basis points. For the asset classes Sme retail (RSMS) and other Sme retail (SMOT), the average PD for the third quartile is higher than the average PD of the fourth quartile (in other terms, a loss of monotonicity is observed). On this regard it should be highlighted that the time horizon adopted by institutions for the purpose of calibrating PD risk parameter are generally longer than 5 years, therefore an exhaustive analysis should also take into account a 10-year horizon.

Table 3: Average PD by cluster of average Default rate

	CORP		MORT		RETO		RQRR	
	PD	DR5y	PD	DR5y	PD	DR5y	PD	DR5y
DR5y < Q1	1.01%	0.07%	0.61%	0.10%	1.18%	0.23%	1.31%	0.08%
DRy5 ∈ (Q1,Me]	1.29%	0.53%	0.83%	0.31%	1.72%	0.70%	0.94%	0.39%
DRy5 ∈ (Me,Q3]	1.63%	1.02%	0.81%	0.51%	1.82%	1.19%	1.75%	0.90%
DRy5 > Q3	2.23%	3.21%	1.25%	0.96%	2.53%	2.09%	3.35%	2.37%

	RSMS		SMEC		SMOT	
	PD	DR5y	PD	DR5y	PD	DR5y
DR5y < Q1	1.30%	0.22%	1.34%	0.19%	2.06%	0.38%
DRy5 ∈ (Q1,Me]	1.80%	0.65%	1.49%	0.80%	2.95%	1.22%
DRy5 ∈ (Me,Q3]	5.21%	1.18%	2.32%	1.40%	4.25%	1.86%
DRy5 > Q3	3.40%	1.80%	2.90%	2.74%	3.39%	3.57%

Source: Benchmarking DB

27. The following chart shows (for some of the asset classes) the distribution of the PDs divided on the ground of the quartiles of the five-year average default rate. As it can be expected, the average PD increases with increasing default rates but the dispersion around the average is wide, and the distributions tend to largely overlap indicating the absence of a clear separation in terms of PDs between the groups. Also, for some of the asset classes, like SMOT, the monotonicity of the average PD is not ensured (the average PD of the third class is higher than the average PD of the fourth class).

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[11] The segmentation into groups enables to do the comparisons in terms of averages which reduces the impact of any outliers. Alternatively, a regression analysis could be done and indeed in Table 6 also the R-squared of such regression analysis is shown.

Table 4: PD distribution by class of DRy5
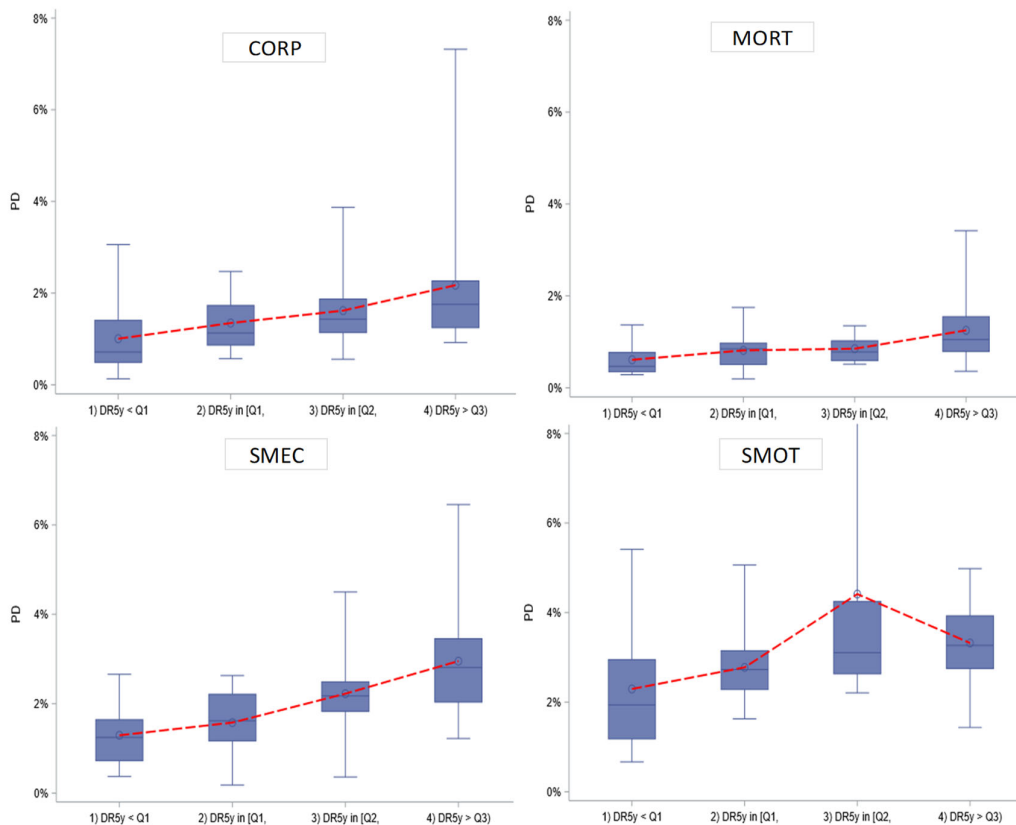
Source: Benchmarking DB

28. It is possible to obtain a decomposition of the total variance of the PD in two components: the "between variance" reflects the distance between the clusters in terms of PD. The higher this distance is, the greater the contribution of the average default rate related to the variability of the PDs. The "within variance" is the average of the variances observed in each cluster. This is the component of the variance that is not explained by the average default rate.

29. The following table shows the share of variance that is explained by the average default rate. Referring to the 2023 data, the share of variance explained is limited to about 15% for two of the asset classes. The evidence that most of the variance remains within the clusters seems indicating that there are factors other than the average default rate which explain the variability of PDs (e.g. the possible impact of different calibration approaches). The results are confirmed by the rather low level of the coefficient of determination (R^2) of a linear regression between the PDs and the five years average default rate. But in this case further analyses might also be carried out on a time horizon longer than 5 years because, banks might use a longer time series of default rates to calibrate their PD.

30. However, several factors other than the average default rate might contribute to PD variation. For example, different calibration methodologies (PIT versus TTC) can induce variability against

a similar level of average default rates, various expert adjustments or even less direct factors reflecting different underlying risk profile of banks' portfolio. The next section investigates, for example, the effect of the margin of conservatism and add-ons applied by banks and Supervisors on the variation of PD across EU banks for HDP portfolios.

Table 5: Share of variance of the PD explained by the average default rate

Asset Class	Explained Variance	R^2
CORP	17.9%	22.3%
MORT	20.8%	19.4%
RETO	28.4%	35.1%
RQRR	41.8%	38.4%
RSMS	32.8%	34.5%
SMEC	31.9%	29.1%
SMOT	15.3%	16.8%

Source: Benchmarking DB

5.2 Regulatory PD vs PD without conservatism measures

31. In the past, it has been recognized that the margins of conservatism applied by banks to address issues of various nature such as data quality, can contribute materially to determining an increase in variability. For this reason, the *EBA guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures* (EBA/GL/2017/16) have introduced some definitions but have also stressed the need to make such interventions transparent. In fact, although these interventions are normally justifiable from a prudential point of view, the limited homogeneity in the determination and quantification of such corrections can contribute to increasing the variability.

32. The data collection for the benchmarking exercise includes a measure of the PD net of supervisory measures and margin of conservativism where the first ones are imposed by the Supervisory Authority and the second ones are calculated/estimated by the banks. This information was available only for about 2/3 of the banks representing 70% of the reported exposures.

33. The table below shows the reduction of the variability (measured in terms of standard deviation) of the PD obtained by deleting the prudential add-ons and the margins of conservativisms. For example, for the Corporates' portfolio, the add-ons and MoCs accounted for about 14% of the standard deviation (std). Note that removing add-ons and MoCs likely shapes a decrease of the mean value of the parameters, and this could contribute to reducing the variability measured as std. An alternative measure of the variability is the coefficient of variation (cv) that is the std normalized by the mean. It is observed that the reduction of variability for the portfolios RSMS and SMOT is confirmed by looking at the cv.

34. Nevertheless, it is worth to highlight that prudential add-ons can be applied not only at the level of the single parameter but directly also on the resulting risk weights, for this reason the

evaluation of the impact is more complex and would require further analysis. Secondly, it must be noticed that these prudential interventions increase the average value of the parameter so that the comparison between the standard deviations could be not correct. To correct for this aspect, it is possible to refer to the standard deviation normalized by the average (i.e. the coefficient of variation, cv). The table shows that the reduction in terms of cv is less evident. In addition, a disentangle of the effect of prudential add-ons has been carried out, showing that most of the variability observed is due to the MoC applied by the institutions. For example, only 0.6% of the reduction of the variability is due to prudential add-on compared to an overall reduction of 13.9% due to both prudential add-ons and MoCs. Considering the CV metric, the reduction of the variability due to prudential add-ons is 0% for all portfolios but RSMS.

35. It is worth to highlight that prudential add-ons can be applied not only at the level of the single parameter but directly also on the resulting risk weights. Consequently, the evaluation of the impact of prudential add-ons is more complex and would require further analysis.

Table 6: Reduction of the variability obtained by deleting prudential add-ons and MoCs, December 2023

Asset Class	Nr of Instit.	Reduction of the std		Reduction of the cv	
		due to add-ons	due to add-ons and MoCs	due to add-ons	due to add-ons and MoCs
CORP	57	-0.6%	-13.9%	0.0%	0.0%
MORT	54	0.0%	0.0%	0.0%	0.0%
RETO	49	-2.8%	-10.1%	0.0%	0.0%
RQRR	25	-2.6%	-5.9%	0.0%	0.0%
RSMS	36	-7.8%	-24.7%	-3.2%	-9.9%
SMEC	57	-2.2%	-4.9%	0.0%	0.0%
SMOT	39	0.0%	-30.2%	0.0%	-16.5%

Source: Benchmarking DB

6. The LGD of the Other Retail portfolio

36. This section investigates the possible factors that might explain the LGD variability across EU banks. It focuses on the Other Retail asset class with the aim to analyze the impact of collaterals on LGD estimation. Especially interesting is the presence of real estate collateral reported by some banks.
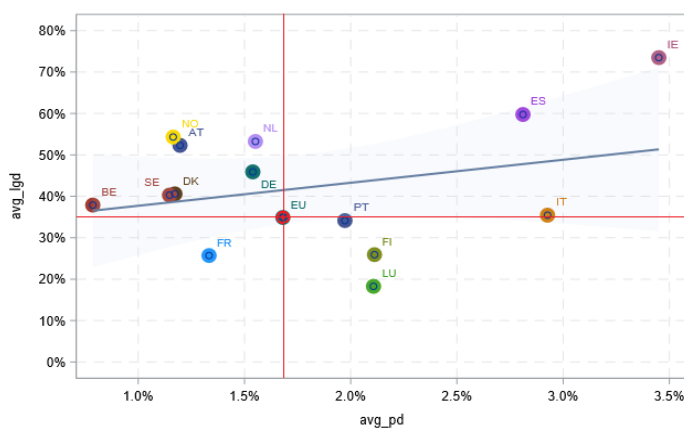
6.1 Drivers of the variability in LGD 1

37. From Figures 4 and 5 in Section 4 it is possible to notice, for the Other Retail portfolio, that while the variability of the PD decreased substantially, the standard deviations of the LGDs is constant or only slightly decreasing for most asset classes. Higher decreases are observed for Institutions and Corporates, while a slight increase is observed for Other Retail and SME corporate.

38. Given that the Other Retail asset class includes a wide variety of technical forms of consumer credit with a wide possible range of collateralization in terms of type and degree of coverage, it is reasonable to expect a that some variability in the LGD estimated by the banks would persist even if their estimation methodologies were broadly aligned.

39. The figure below shows the average PD and LGD for this asset class by country of the counterpart. Only exposures located in the home country of the banks were considered. It can be noticed that a clear distinction between countries is observed both in terms of estimated PD and LGD, and a certain level of correlation between PD and LGD is present, which might be due to different factors (e.g. different proportions across countries of types of obligors, facility types, collateralization practices, etc.).

Figure 7: Distribution of the average LGD for the asset class other retail

Source: Benchmarking DB

40. The following analysis investigates the impact of possible drivers of the variability of the estimated LGDs. It assesses the impact of the presence, type and amounts of guarantees and

collaterals. It also assesses the impact of the cure rate and of the time to recovery, due to its possible different discounting impact on LGD, but also of the impact of exposure size, because fixed recovery costs might have higher impacts on the LGD when the size of exposure is limited.

41. Table 7 shows the results of a linear regression (parameters estimated by OLS) between the LGD and those selected risk drivers at institution level.

$$LGD_i = b_0 + dumy\ variables\ by\ country +$$

$$+b_1 RealGar_i + b_2 FinGar_i + b_3 OthGar_i + b_4 RecoveryTime_i +$$

$$+b_5 RealGar_i + b_6 CRproxy_i + b_8 AvgEad_i$$

42. Information about the guarantees and collateralization were retrieved from the Corep template C.08.02. The amount of the guarantees and collateralization is divided by the amount of the Ead. A proxy of the cure rate was obtained exploiting Corep data by comparing the LGD estimated for performing exposures with the LGD estimated for non-performing exposures. The average size of the exposure can be proxied by dividing the Ead by the number of borrowers. The average time to recovery is available in the Finrep template F.47.

43. It can be noticed that nearly all the estimated parameters are negative, as expected. Secondly, some of these are significantly different from zero (the cure rate, the share of real guarantees). For example, an increase in the cure rate of 10 percentage points is expected to shape on average a reduction of the LGD by 7 percentage points. The regression explains about 50% (R^2) of the variance of the LGD.

Table 7: Regression analysis of the LGD[12]

Root MSE	0.12017	R-Square	0.5468
Dependent Mean	0.40462	Adj R-Sq	0.4205
Coeff Var	29.70008		

		Parameter Estimates			
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.85309	0.18325	4.66	<.0001
RealGar	1	-0.24493	0.12521	-1.96	0.0550
FinGar	1	-0.13638	0.14314	-0.95	0.3445
OthGar	1	-0.25338	0.19921	-1.27	0.2082
time_recovery	1	0.01758	0.01831	0.96	0.3408
cr_proxy	1	-0.69913	0.33681	-2.08	0.0421
avg_ead	1	-0.03473	0.01715	-2.03	0.0472

Source: Benchmarking DB and Corep

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[12] RealGar, FinGar, OthGar are computed as the ratio between the value of guarantee type and the exposure. Time_recovery is the Average duration of litigation procedures concluded in the period (in years). cr_proxy is a proxy of the cure rate. Avg_ead is the amount of the exposures divided by the number of borrowers

44. Figure 8 shows that, this simple model mostly based on approximations of the possible drivers impacting LGD and which could suffer from some misreporting problems, is still able to partially explain that the average LGD values might vary between 20% and 60%.

45. So, even if further analysis would be necessary, for example to better assess the impact of the facility type, this analysis shows that the wide variability of the LGD of the Other Retail asset class could be partially warranted due to a certain heterogeneity in the level of collateralization but also due to structural differences between countries.

Figure 8: Regression analysis of the LGD: actual vs predicted values
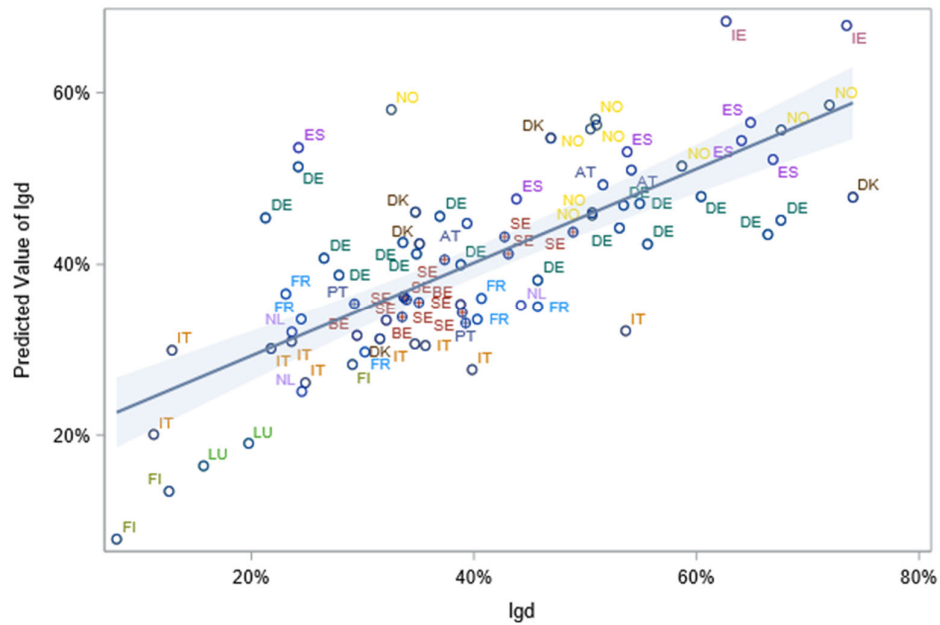
Source: Benchmarking DB and Corep

Annex I – Data sample

46. The subset (sample) of European institutions which are considered for the analysis provided in this report is obtained from the list of institutions[13] which have a reporting obligation following Article 78 of the CRD. These are the institutions which have had the approval to calculate their own-funds requirements for their credit risk exposures by application of the internal ratings-based (IRB) approach as of 31.12.2023 (the relevant reference date for this report).

47. Not each participating institution provides data for each portfolio. Therefore, the number of institutions which are taken into account for the charts referring to specific exposure classes or more granular benchmarking portfolios varies. As such, for each chart and table, the number of institutions considered that the analyses may be different (e.g. institutions not submitting a template due to specificities of their portfolio, like no LDP IRB models).

48. The following table, as previously mentioned, provides an overview of the overall number of participating institutions, and how they are distributed across asset classes and approaches (AIRB, FIRB or SLSC).

Table 8: Use of different regulatory approaches by Exposure Class

		AIRB	FIRB	SLSC	Nr of institutions
LDP	**LCOR**	49	53		**79**
	COSP	28	20	29	**60**
	CGCB	12	25		**31**
	INST	20	40		**48**
HDP	**CORP**	51	51		**81**
	SMEC	50	48		**78**
	SMOT	62			**62**
	RETO	73			**73**
	RSMS	58			**58**
	MORT	82			**82**
	RQRR	33			**33**
		95	**60**	**29**	**103**

Source: Benchmarking DB

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[13] This list is published on the EBA website: EBA updates list of institutions involved in the 2023 supervisory benchmarking exercise | European Banking Authority (europa.eu)

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